DART Water Rescue Risk Assessment and Hazard Mitigation

OBJECTIVE:

To successfully mitigate hazards associated with DART water rescue operations.

PROCEDURE:

This document identifies known hazards which the DART water rescue team may be subjected to. Each hazard is identified, broken into warning signs and symptoms, causes, potential effects, and mitigation. The intent is to mitigate hazards through:

A. Removal or lessening the factors associated with causing the hazard
B. Removal or lessening the potential effects associated with the hazard

Hazards outside of the water rescue team are not addressed. This document is to be presented to the appropriate level of the DART organization such that they are informed of the training hazards, and may approve the training activity.

Removal or lessening the factors associated with causing the hazard lowers the hazard probability. Risk of hazard occurring with negative consequences is defined in Table 1 – Hazard Probability. Removal or lessening the potential effects associated with the hazard lowers the negative consequences the hazard can cause. Worst case feasible effect on personnel and / or the environment is defined in Table 2 – Hazard Severity.

The level of risk is shown in Table 3 – Hazard Risk Assessment Matrix (HRA). This shows relation between the hazard probability and severity. A different level of command authority is required to accept a risk as given in Table 4 – Risk Acceptance. Operations requiring the DART Chief or Center Director may be prepared for site and task specific incidents and executed under judgement of the Water Rescue Captain.

Hazards are identified and summarized in Table 5 – Hazard Identification. Risk assessment is shown for the current hazard level. The current level reflects risk mitigation completed and applies a hazard risk level to each as per Table 4.

Hazard mitigation is an ongoing exercise. Hazard identification and risk assessment review shall be conducted on a yearly basis (within calendar year). Table 5 will also be updated as mitigation efforts continue to decrease water rescue team exposure to know hazards or as new hazards are listed. It is the responsibility of the water rescue team captain(s) to conduct a yearly review of the hazard and risk assessment. Mitigating efforts appear in Appendix A.

Appendix A contains each hazard broken out separately with:

Warning Signs or Symptoms
Causes
Potential Effects
Mitigation
Tasks Needed

Warning Signs or Symptoms
List of conditions likely to be present when the hazard is present.

Causes
List of event(s), which can occur from the hazard.

Potential Effects
List of worst case injuries, damage or negative consequences that could occur.

Mitigation
List of mitigation efforts related to a hazard to lower the probability of occurrence of potential effects and lessen severity of potential effects.

Tasks Needed
List of mitigation items which have not been completed through training, equipment, standard operating practices (SOP), … Current level of risk expressed in Table 1 reflects mitigation items completed or practices to be employed on scene.

Hazards identified in Table 5 are for currently expected hazards under expected conditions. If any conditions change from expected, the water rescue team captain and / or site safety officer will reassess the hazard risk on the scene and make the appropriate changes.

HAZARD RISK ASSESSMENT PROCEDURE:

Each hazard is assigned a letter corresponding to its probability of occurring. Each hazard is also assigned a number (Roman numeral) corresponding to the severity or worst injury that could feasibly result from the hazard. A matrix chart of the probability and the severity is used to determine the hazard risk assessment, or HRA for that hazard. If the HRA is higher than a 4, mitigation actions are chosen that will either reduce the chance of the hazard occurring, or the worst injury feasibly resulting. The *probability* and *severity* of the hazard is re-assigned and the current HRA is assessed. The level of this HRA is used to determine what level of the DART organization must be briefed on the hazard, and approve the training activity.

Table 1 - HAZARD PROBABILITY

The probability of the hazard to occur during a ten year span of DART operations.

Level A	(Probable)	Likely to occur several times during ten years of operations
Level B	(Remote)	Likely to occur once during ten years of operations
Level C	(Improbable)	Not likely to occur during ten years operations
Level D	(Highly Improbable)	Occurrence is considered to be extremely unlikely to occur

Table 2 - HAZARD SEVERITY

The worst case feasible effects (immediate or long term) on personnel and/or environment and property.

Category I	(Catastrophic)	Death or permanent disabling injury and/or extensive damage to environment and/or property.
Category II	(Critical)	Severe injury or lost time injury (>3 months) and/or moderate damage to environment and/or property.
Category III	(Marginal)	Minor injury or lost time injury (>1 day) and/or minor damage to environment and/or property.
Category IV	(Negligible)	Less than minor injury and/or less than minor damage to environment and/or property.

Table 3 - HAZARD RISK ASSESSMENT MATRIX (HRA)

Hazard Probability \ *Hazard Severity*	**I** death	**II** severe injury	**III** minor injury	**IV** no injury
A likely to occur several times	1	1	2	3
B likely to occur once	1	1	2	3
C not likely to occur	2	2	3	4
D extremely unlikely to occur	3	3	4	4

Table 4 - RISK ACCEPTANCE

Final HRA	*Description*	*Required Approvals*
1	(Unacceptable)	Water Rescue Captain, DART Chief, Center Director
2	(Undesirable)	Water Rescue Captain, DART Chief
3	(Acceptable with Review)	Water Rescue Captain
4	(Acceptable)	None